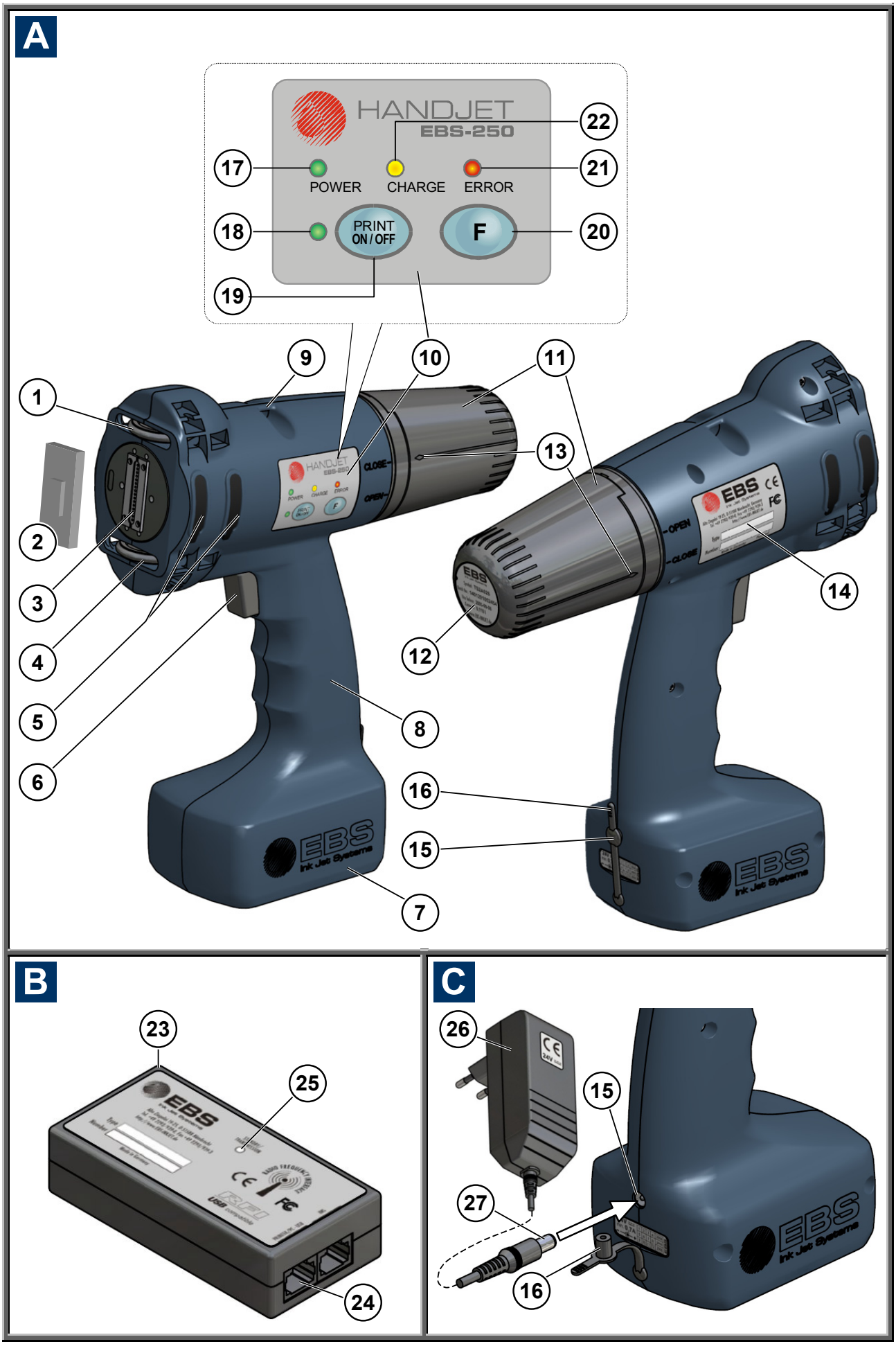
EBS
Ink-Jet Systems

- **Operating instructions**
- **v. 20050316#1.0**
- **EN English**

HANDJET EBS 250


A
HANDJET
EBS-250
POWER
CHARGE
ERROR
PRINT
ON / OFF
F
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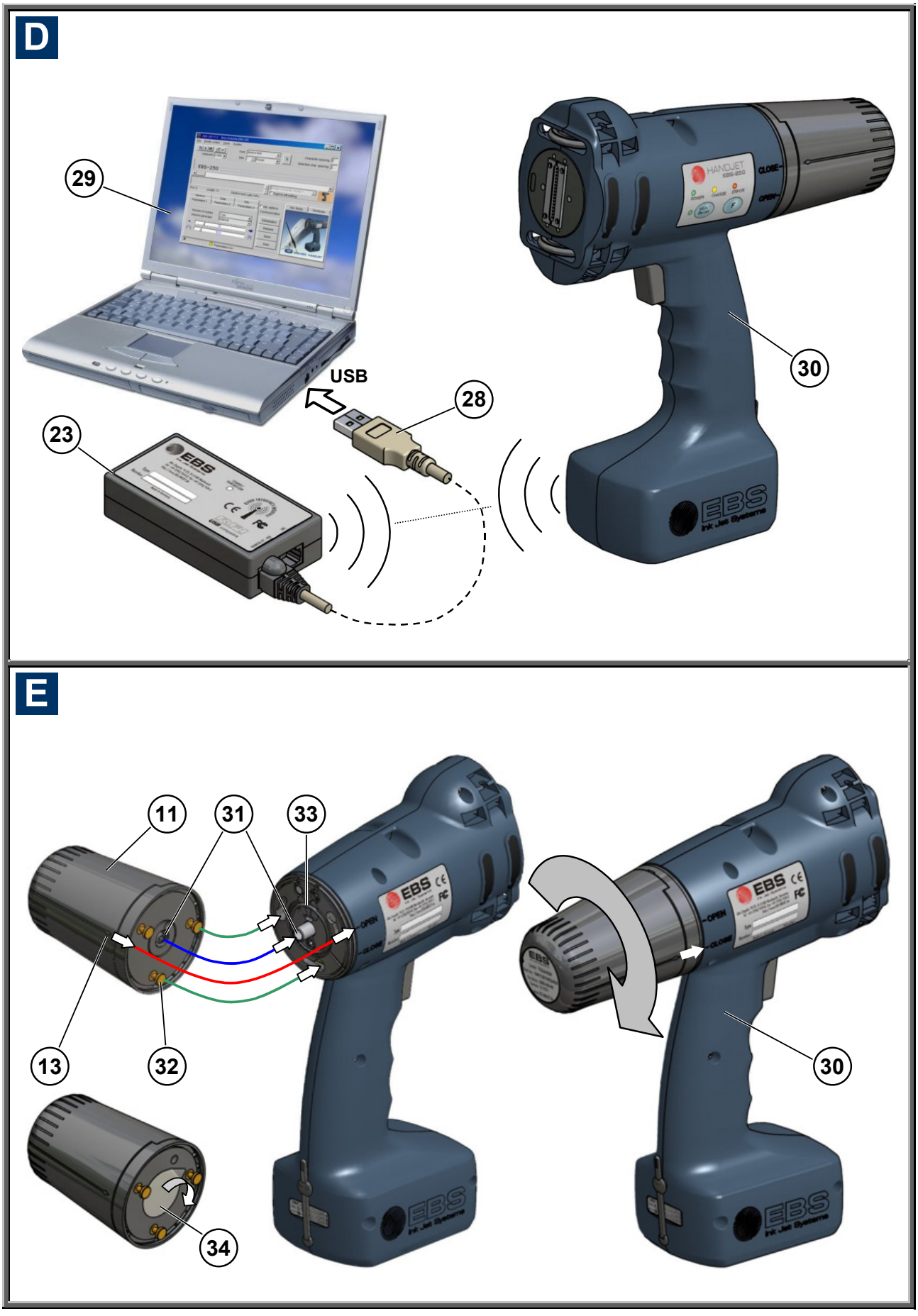
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USB
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23
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E
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Components of the Portable Printer System

See figures **A** **B** **C** **D** **E** **F**.

1. Upper guide roll.
2. Nozzle shield.
3. Nozzle plate - front part of the print head (ink outlet).
4. Lower guide roll, to synchronise printing.
5. Openings with plugs for adjusting electromagnets.
6. Release - a printing release button, also used by other functions.
7. Printer base, battery compartment.
8. Printer holder.
9. Hanger.
10. Control panel and keypad.
11. Ink container.
12. Ink container label.
13. Container OPEN-CLOSED indicator.
14. Name plate.
15. Battery charge socket.
16. Charge plug.
17. Power LED indicator.
18. PRINT ON/OFF LED indicator (the ***print*** state).
19. PRINT ON/OFF button.
20. Function key **F**.
21. Error LED indicator.
22. Charge LED indicator.
23. RFI Module - for wireless (radio) communications via USB interface.
24. Socket to connect cable from the computer communications port.
25. Radio transmission LED indicator.
26. Power pack to charge printer batteries or power supply RFI module **23**, with RS-232 interface.
27. Plug of power pack **26**.
28. Cable for series communication between computer (USB port) and RFI module.
29. Computer.
30. HANDJET EBS-250 Printer.
31. Non-return valves in the ink container and ink system.
32. Guide bayonets in the ink container.
33. Ink container gasket.
34. Seal to protect the ink container.
35. Buzzer - a buzzing signal generator, located inside element **8** of the printer.

Signs

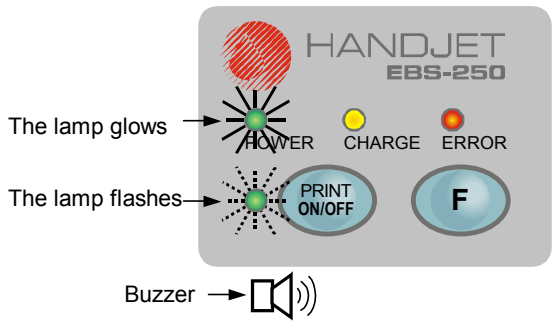
Information signs indicating:

- that the actions described need to be taken with extra or special care,
- the printer's additional or specific functions or options, which are not described anywhere else,
- untypical behaviour of the printer and other hints.

A warning not to perform the operation that might be unsafe or critical for the printer. It requires the user to follow closely the instructions given therein.

A **B** **C** Figure numbering notation

The meaning of LED and other indicators:



PRINT ON/OFF — **PRINT ON/OFF** button (**19**) should be pressed for a short time (<1 sec)

F — **F** button (**20**) should be pressed for a short time (<1 sec)

PRINT ON/OFF 3 sec. — **PRINT ON/OFF** button (**19**) should be pressed for a longer time (>3 sec)

F 3 sec. — **F** button (**20**) should be pressed for a longer time (>3 sec)

Editing markers:

	Font change marker - brown
	Beginning-of-monospaced-text marker (inserts **F1**) and end-of-monospaced-text (inserts **F2**) - red

Editing markers:

	Variable field - incremental counter (inserts **Shift+F1**) - blue
	Variable field - decremental counter (inserts **Shift+F2**) - green
	Variable field - universal date and time (inserts **Shift+F12**) - turquoise
	Wraparound marker - green
	A marker white in colour means that the cursor is just on the left of the marker (it can be deleted with the BackSpace key).

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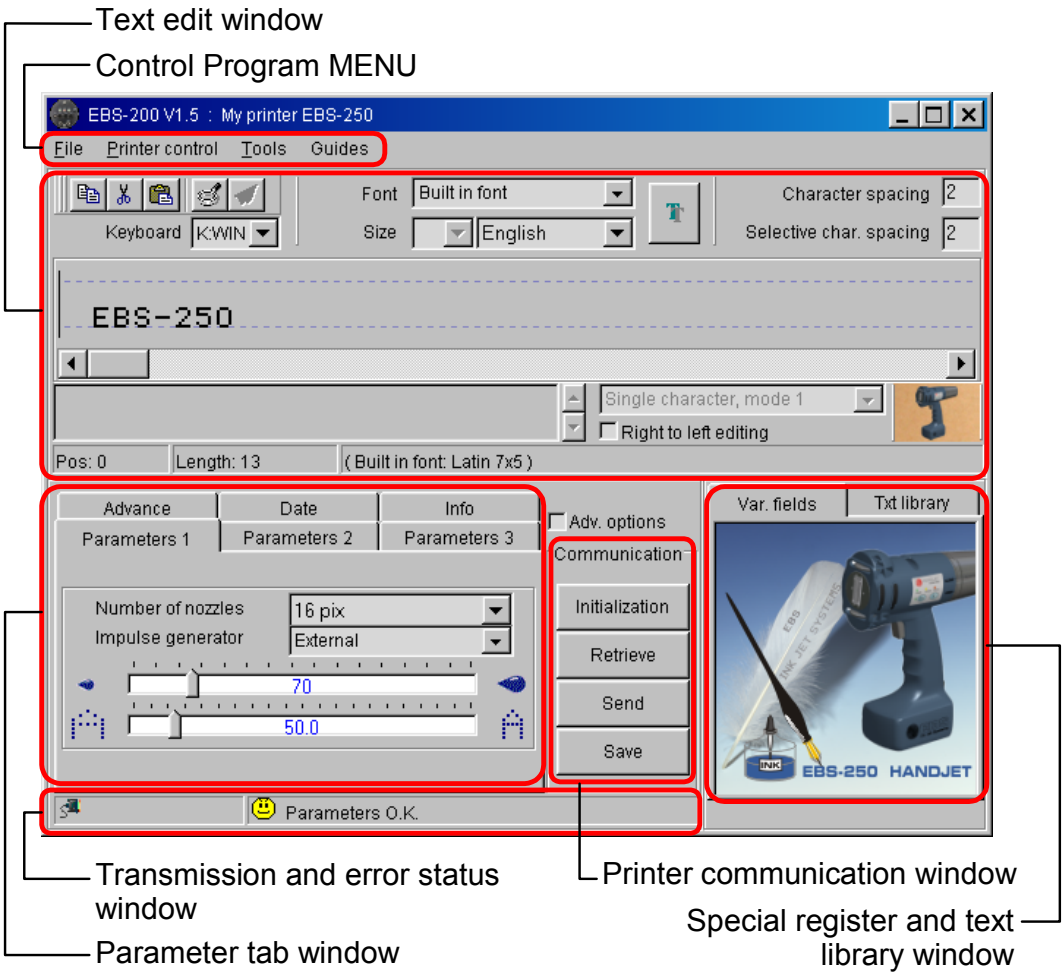
F



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Dear User,

In order to get full information on how to operate your Ink-Jet Printer, please read these Instructions carefully.

As the scope of delivery depends on your order, therefore it may happen that the deliverables differ slightly from some descriptions and illustrations. As we need to keep pace with new technological advancement and our customers' specific requirements, we reserve the right to introduce changes in the form, design and technical solutions adopted. In view of the above, no data, illustrations or description contained in these Operating Instructions shall make grounds for any claims. Should your Ink-Jet Printer be equipped with options that are not illustrated or described in the Instructions or should you have additional queries after having read the Instructions, please contact any representative of EBS Ink-Jet Systems for more information.

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EBS Ink-Jet Systems, the manufacturer, shall not be responsible for damages to the device due to the operation that is inconsistent with the Operating Instructions or due to consequences of drafting or printing errors in these Instructions.

The printer control program to be installed on your computer is a versatile tool for operating EBS-200 series stationary printers and EBS 250 series manual printers. Therefore some of its components and functions which (i) are used exclusively for EBS-200 series printers or (ii) could be used in EBS-250 series printers but are of little significance for manual printers, will not be described in these Instructions or will be described only briefly.

Operational Safety

Before you start your printer for the first time read the hints given below and follow the underlying principles for your own and other persons' safety.

General safety instructions

1. The device must not be operated in rooms where explosion hazard exists.
2. No prints can be made on objects whose temperature exceeds 100°C at the time of printing.
3. No open fire or spark producing devices or objects are allowed in the area where the device operates.
4. During printing ink drops invisible to people's eye are jetted out of the head at pressure. Do not aim head outlet **3** at any persons, animals or casual objects because they may get splashed with ink unintentionally.
5. The following requirements need to be met when washing, cleaning and maintenance operations are performed or ink containers are replaced:

- The operations can only be performed in a workplace that is especially designed for that purpose, when the device is switched off and protective clothing is worn. A fire extinguisher designed to extinguish electrical devices and flammable solvent fires must be placed within easy reach of the device. Air ventilation needs to be ensured at the workplace.

WARNING: The ink is inflammable!

- Be careful not to splash the ink. Especially **eyes need protecting**. It is advisable to wear protective glasses.
- Protect the ink and the solvent (also waste fluid remaining after the printer has been washed) against fire, high temperature, sparks, electric arc and other electric discharge as they **may cause ignition of these inflammable fluids!**
- Do not use plastic vessels to do the washing. Metal vessels are recommended.

6. Protect the printer against dirt, heavy dust and excessive moisture.
7. EBS-Ink-Jet Systems is able to ensure perfect and safe operation of the printer only when original, printer-specific accessories and consumables are used.

Protecting the Battery Pack

The following principles need to be obeyed to protect the batteries that are built into the printer:

- Protect the printer against excessive temperature and fire. Do not expose it to strong solar radiation for a longer time.
- Avoid a sudden change in temperature (cold → hot) that might cause vapour condensation inside the printer and thereby speed up battery discharge and electronic circuit corrosion. Condition the printer for about 1 hour before use after it has been moved from a cool place to a warm one.

When Ink or Wash-up Spills

- Should the eyes or skin get irritated with ink or wash-up:

EYES rinse the eyes with running water for at least 15 minutes, then see your oculist.
SKIN wash the skin with water and soap.

- If the clothing has been splashed, take it off as soon as possible.
- When ink or wash-up spill, wipe out the spilled fluid with a piece of absorbent material, and then remove the material in compliance with fire and health and safety-at-work regulations.

Control of electromagnetic interference

1. Properties of high-frequency devices.

Your Ink-Jet printer contains a high-frequency transmitter and receiver. When it is in the ON state, the printer receives and transmits high-frequency (HF) signals. The controller of the Ink-Jet printer system controls energy emitted during printer operation on an on-going basis.

The **HANDJET EBS-250** printer complies with all the requirements of the regulations concerning the impact of the HF energy on humans in your country.

2. Printer accessories.

If you do not use original **EBS** parts or printer accessories, including batteries or electronic components, the statutory requirements may not be met and the HF electromagnetic emission limits may be exceeded.

Medical equipment

Pacemaker

Pacemaker manufacturers recommend that the distance between a

transmitter and the pacemaker be at least 15 cm so that any mutual interference between the two devices is avoided.

Other medical equipment

If you use a piece of medical equipment, please ask the equipment manufacturer whether the equipment is sufficiently shielded against electromagnetic radiation. In certain circumstances your doctor may help you gain the information you require.

Operation in explosion hazard areas

If you work in an explosion hazard area, switch your Ink-Jet printer off, **do not** replace the batteries or **do not** remove them from the printer and follow all instructions and precautions. Sparking generated by batteries may cause an explosion and/or fire in this hazardous area and result in personal injuries or even death.
The regions where a potential explosion hazard exists are usually marked appropriately. The examples of such regions are: solvent storage areas, fuel storage areas and petrol stations, below-decks onboard ships, storage areas for explosive gases, air mixtures, chemicals and metal or flour powders.

Operation in areas of blasting

In order to avoid interference during blasting (shot firing) the printer should be switched off in blasting areas or in places where the use of radio devices is prohibited.
Follow the operating instructions and information signs.

🕮 Application

The **HANDJET EBS-250** printer is designed for marking, labelling, putting prints and simple graphics wherever the use of a manual labelling device is required or preferred.
Prints are put on objects in a non-contact INK-JET way.

🕮 Installing and Starting up

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Preparing the Printer for Operation

Charging the Battery

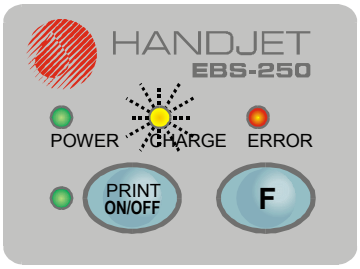
A LI-ION top-quality battery has been installed in the printer. It can be recharged at any stage of printer operation.

The battery that is new or has not been used for a long time cannot be charged up to its full capacity. Therefore, in order to form the battery follow three charge-and-then-discharge cycles. See figures **A** and **C**.

1. Pull out plug **16** from socket **15** and tilt it.
2. Insert power pack connector **27** to socket **15**, and connect power pack **26** to a wall outlet.
3. Lamp **22** glows when the battery is being charged. Wait until the charging is over and lamp **22** starts flashing.
4. Remove the power pack plug **27** and secure socket **15** with plug **16**. Detach the power pack from the mains and place it into the bag.
5. Do not recharge the battery until it is completely discharged - see ***Low-battery indicator***.

The battery is not replaceable as standard.
When the battery is charged, the printer cannot communicate with the computer but the printer can be used for printing at that time.

Low-battery indicator



The printer indicates the low-battery condition with a buzzing signal from buzzer **35** and flashing lamp **22**:

- Short-time, regular flashes mean that the battery is almost discharged, the printer can still be operated,
- Uniform blinking means that the battery is almost completely discharged. In this condition any further operation may be discontinued because the printer can switch off automatically. Recharge the battery.

Installing and Replacing the Ink Container

See figure **E**.

Installing the Ink Container in the Printer

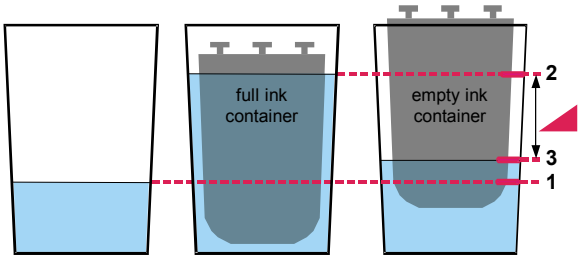
When the printer is delivered, the ink container is detached. Follow the steps below in order to install the container:

1. Remove the container from packing **11**.
2. Remove seal **34** carefully from container **11**, so that no leftovers remain on the container shoulder close to gasket **33**.
3. Position the container in relation to the back of the printer so that three bayonets **32** of the container aim at guide holes of the container connector. At that moment arrow **13** indicates the **OPEN** position.
4. Insert bayonets **32** into the guide holes and while pressing the container against the printer turn it clockwise, so that arrow **13** is in the **CLOSE** position.

How to Check Whether There is any Ink in the Ink Container?

When the printer stops printing make sure that there is no ink in the container. You can assess the ink level in the container in three ways:

1. Weigh the printer on installing a new container - write down the weight. When the container is empty, the weight of the printer is smaller by:
   - about 83 grams - for a 110 ml container.
2. Detach the full container from the printer, place it with its bayonets **32** up into a vessel whose diameter is slightly greater than the diameter of the container and pour water so that the container starts floating without turning upside down. Mark the water level on the vessel before (line 1) and after (line 2) the full container has been immersed. Then insert the empty container and mark the immersion level (line 3). You can check the ink consumption level at any time by immersing the container in water and comparing the current level with the previous lines (lines 2 and 3). Make sure there is always the same water level in the vessel (line 1).



3. All ink drops jetted are counted and the printer uses the result to evaluate ink consumption. In order to get access to the ink level while the printer is on, click the Retrieve key in the control program window. Then the control program communicates with the printer and displays the approximate ink consumption level (as a percentage) in container **11** in the **Ink level** box of the **Parameters 3** tab in the control program window.

Replacing the Ink Container

If possible, replace the container in dustfree conditions so as to minimise the amount of contaminants getting in to the printer's ink system.
Do not leave the printer with the ink container detached for a longer time than that required to replace the container. While detaching or installing the container be careful not to splash anyone or anything with ink.

See figure **E**.

1. Turn the printer off - see ***Switching the Printer Off***.
2. Turn the empty container **11** counter clockwise, so that arrow **13** is in the **OPEN** position.
3. Pull out the container carefully towards the back of the printer.
4. If gasket **33** and contact plates in the guide holes for two lower bayonets are dirty, remove ink leftovers from them with wash-up.
5. Install a new container - see ***Installing the Ink Container in the Printer***.

Switching the Printer On and Off

See figure **A**.

Switching the Printer On

Press key **19**, PRINT ON/OFF, and while holding it down press release button **6**. When the printer is switched on, lamp **17** glows and a sound signal is heard from buzzer **35**.
Once the printer has been switched on, you can start printing a text that is stored in the printer memory - see ***Printing***.

Switching the Printer Off

Press key **20**, F 3 sec., and release button **6** at the same time and keep them down for a few seconds until all lamps stop glowing after buzzing **35** has been heard.

Installing and Starting the Printer Control Program

Installing the Control Program

1. Insert the CD supplied along with the printer to the CDROM drive in your computer and wait for the program to start.

If the programs on the CD do not start running on the computer automatically, start ***setup.exe*** from the CD's main directory.

2. After the program MENU has been displayed, choose the installation option.
3. Follow the instructions displayed during the installation.
4. After all control program components and USB drivers required have been installed, you can communicate with your printer via a radio link - see ***Connecting the Printer with a Computer (via USB interface)***.

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Starting the Control Program

1. Click the *EBS printer* icon on the control panel or, if there is no such an icon, start ***EBS-200.exe*** from the folder where the control program has been installed (*C:\Program Files\ EBS_printers\ EBS-200* as standard).
2. Once started, the control program automatically activates the find-the-printer(s) function and signs the printer on, if the printer is on and the radio communications link operates properly.

Connecting the Printer with a Computer (via USB interface)

See figures **B**, **D** and **F**.
The printer communicates with the computer through module **23** via a radio link. The module uses an USB interface or optionally a RS232 interface to communicate with the computer - see ***Connecting the Printer to a Computer (via RS-232 Interface)***.

1. Find a free USB port in your computer.
2. Use cable **28** to connect the USB port in your computer with socket **24** of module **23**.

If USB drivers of module **23** have been installed during the installation of the control program (see ***Installing the Control Program***), then the module is automatically detected and installed on your computer. Otherwise you are prompted to indicate the location of the drivers on the CD.

3. Fix module **23** appropriately in order to reach the widest radio transmission range.

Do not cover module **23** with unnecessary shields or objects, especially metal ones. Optimally, place module **23** at a certain height, to avoid any obstacles between the printer and module **23**.

4. Switch the printer on.
5. Start the control program. The program will find the printer, communicate with it and display a **Printer is found** message.
6. Click the **Initialization** button to view the printer configuration. Data have been transmitted properly if an **O.K.** message is displayed in the transmission status window.

If you cannot communicate with the printer, try to configure it in the system once again. From the **Guides** menu start the **Network configuration** creator and follow the creator's prompts.

Text Files and Print Parameters

How to Create a Text to be Printed?

Regular Text

See figure **G**.
Insert texts in the text edit line in the edit window.

Use a mouse and the following keyboard keys to edit a text as standard and as you do in other Windows® applications:

→ to move the cursor horizontally to the right,

← to move the cursor horizontally to the left,

SHIFT → to move the cursor horizontally to the right and highlight the text,

SHIFT ← move the cursor horizontally to the left and highlight the text,

Delete to delete one character to the right of the cursor,

BackSpace to delete one character to the left of the cursor,

Home to move the cursor to the beginning of the text,

End to move the cursor to the end of the text.

You can type in up to 1500 characters in one text.

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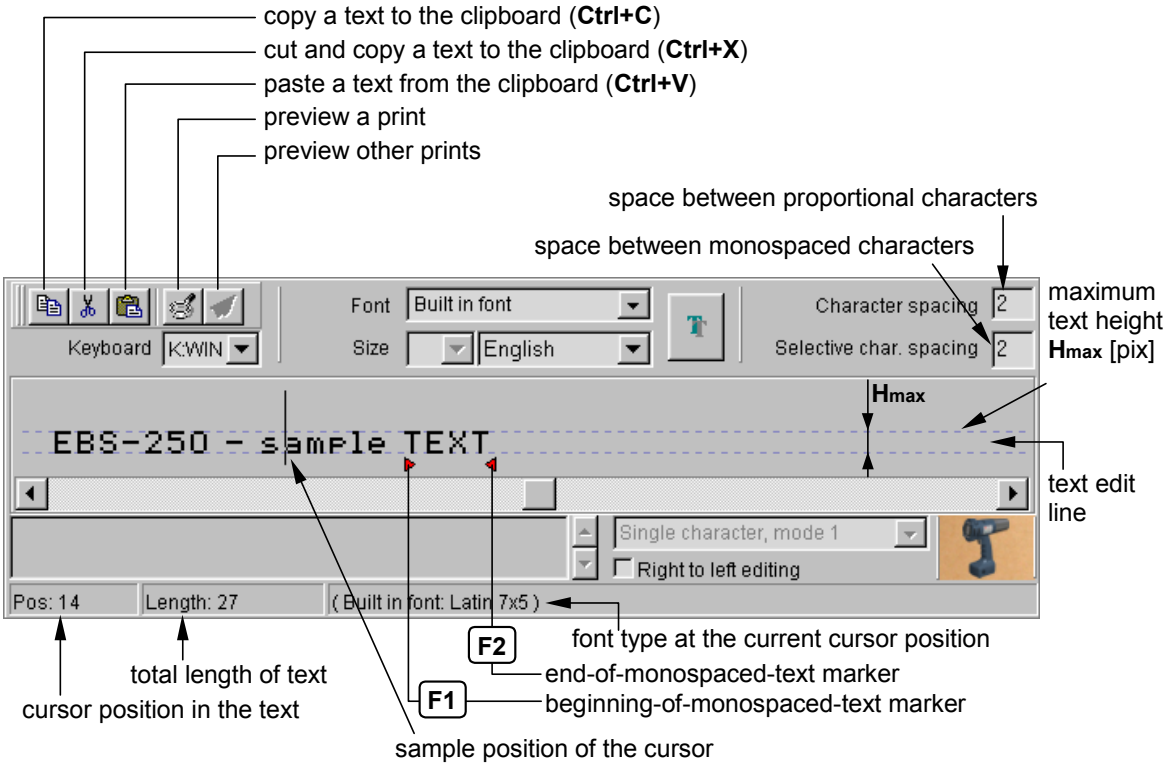
G Text edit window



Proportional fonts are used to insert texts as standard. This means that each letter takes a space proportional to the character width. For example, a letter **W** takes more space than a letter **I**.

When monospaced fonts are used, the character width does not depend on the character. In other words, each character has the same width. The beginning of a monospaced piece of text is usually marked with the F1 key and the end of a monospaced piece of text is usually marked with the F2 key from your computer keyboard. The markers can be deleted as any other characters - with the Delete and BackSpace keys.

Maximum Print Height

See figures **F** and **G**. When your printer is switched on, click the

Initialization key in the control program window to learn the number of nozzles your printer has. When you click the **Parameters 1** tab, the program displays the contents of the **Number of nozzles** parameter which is the maximum print height, **Hmax** [pix] given as a number of dots. At the same time a broken line corresponding to **Hmax** is displayed in the text edit line. It facilitates the matching of fonts and printing capabilities of your printer.

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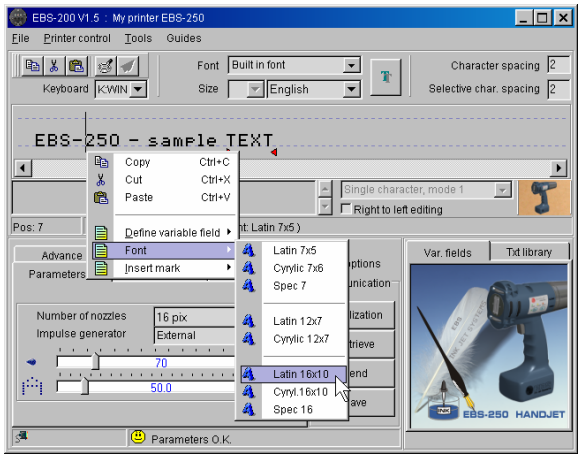
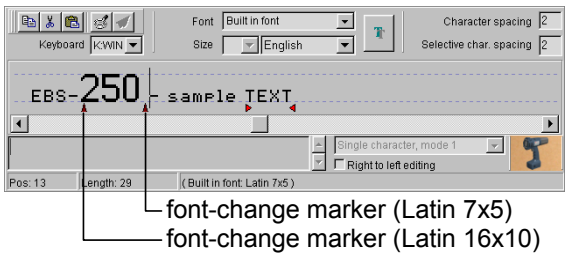
Using and Changing Built-in Fonts of the Printer

The program uses built-in EBS fonts as standard. In order to change the font type and size at any point of the text, follow the steps below:

1. Position the cursor in the text edit line exactly where another font is to be inserted.
2. Holding the cursor on the text edit line, press the right mouse button and select **Font** from the menu displayed. Then select the font type you need from the list displayed, e.g. **Latin 16x10**.
3. Move the cursor to another position and insert another font-change marker.

If only one font-change marker has been inserted, all characters from the marker position to the end of the text are displayed (printed) with the use of the replaced font.



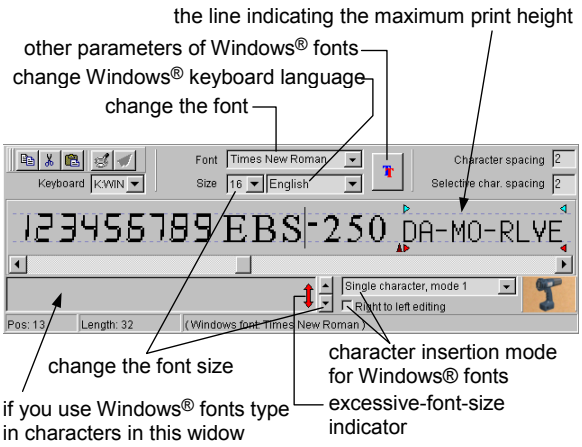


In order to replace a font with a font whose number of pixels (dots) in the vertical direction is greater, you need to adjust (increase) the setting of the **Number of nozzles** parameter.

Using and Changing Windows® Fonts

You can also use Windows® fonts to create texts in your printer.

1. Move to the **Font** list and replace **Built in font** with one of fonts installed in your Windows®. You can change the font **Size** and the keyboard "language" in Windows®. While increasing the text height do not exceed **Hmax** [pix] because otherwise the excessive top part of the text will be cut off.


the line indicating the maximum print height
other parameters of Windows® fonts
change Windows® keyboard language
change the font
change the font size
if you use Windows® fonts type in characters in this widow
character insertion mode for Windows® fonts
excessive-font-size indicator
123456789EBS-250 DA-MO-RLYE

2. Move the cursor to the position where you want to start a text and type in the text. You can change the font at any time.
3. There are three character insertion modes you can use:

   Single character, mode 1, **Single character, mode 2**, **Multi character**. Each of them matches Windows® font characters with the capabilities of your printer (the number of nozzles) in a different way according to the font type, language and character insertion mode (the **Right to left editing** parameter).

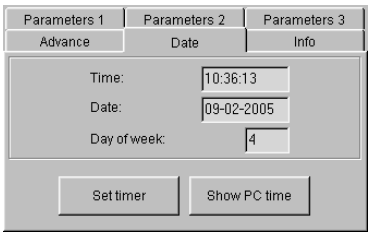
> ! Only the printer built-in fonts can be used to print variable fields; no Windows® fonts can be used.

Variable fields

Variable fields are designated fields of text whose contents are updated automatically after every print. The following events can impact on the contents of variable fields: change in date, change in time, activation of release button **6** and other.
Up to 10 variable fields can be used in one text at the same time.

Date and Time

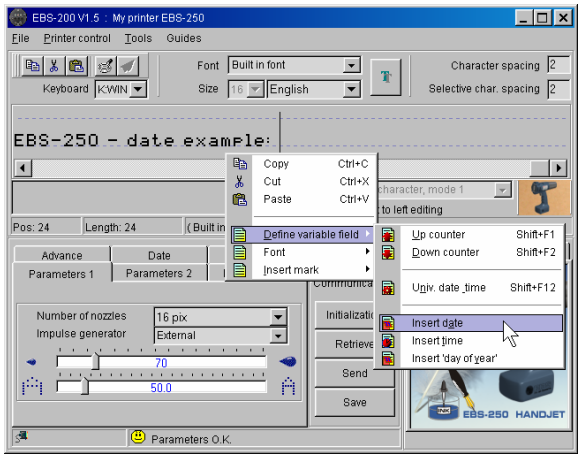
In order to synchronize the date and time of your printer with those of your computer move to the **Date** tab and click the Show PC time and Set timer keys successively.

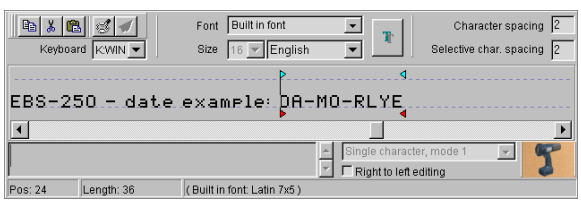


You can set a different date or time in your printer by setting them in the **Date** tab and transferring to the printer with the Set timer key.

In order to insert the date (time) field that is updated automatically, follow the steps below:

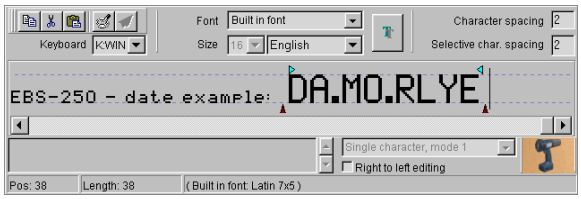
1. In the text edit line position the cursor in the place where you want the date (time) to be displayed.
2. While holding the cursor on the text edit line press the right mouse button and select the command **Define variable field** from the menu displayed. Then select **Insert date** (**Insert time**) in the list displayed.





3. You can insert a font-change marker on the left or right of the date (time) field.

4. You can change separators inside the date (time) field by replacing the existing separators with different characters. You can also remove proportional-text markers.



EN

Universal Date and Time

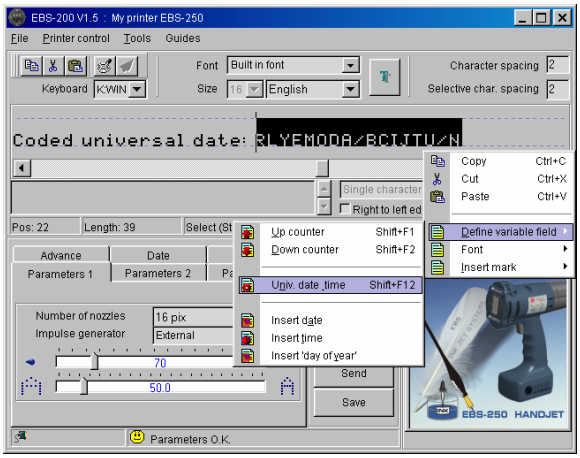
Various components of the current date and time can be printed automatically on every object with the use of a **Univ. date & time** variable field.
Below, there is a list of characters that can be used to encode the date and time components. The date and time components can be preceded, separated and followed by any characters different from those specified below or by a space.

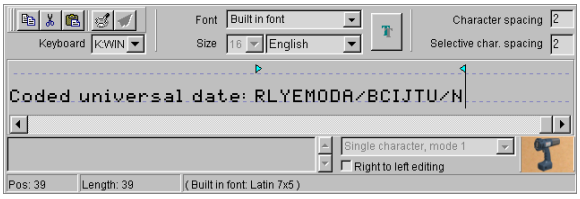
D tens of day in the current date,
A units of day in the current date,
M tens of month in the current date,
O units of month in the current date,
R thousands of year in the current date,
L hundreds of year in the current date,
Y tens of year in the current date,
E units of year in the current date,
B tens of hour in the current time in the 24-hour system,
C units of hour in the current time in the 24-hour system,
I tens of minute in the current time,
J units of minute in the current time,
T tens of second in the current time,
U units of second in the current time,
N number of day in the week (see below).

The following encoding system is used as standard: 1-Sunday, 2-Monday, 3-Tuesday, ... , 7-Saturday).
The numbering of weekdays can be changed in the following way: on checking the time on your computer (by clicking the Show PC time key) or on your printer (by clicking the Retrieve key) change the number-of-weekday parameter in the **Day of week** box for the date displayed.
For example, Monday, 24th October 2005 is encoded as the second day of the week as standard. But if you set **1** in the **Day of week** box and save the modified parameters (of time, date and day of week) to the printer (with the Set timer key), then the following encoding applies: 1-Monday, 2-Tueday, ... , 7-Sunday. And if you set **5** in the **Day of week** box and save the setting to the printer, then the following encoding applies: 1-Thursday, 2-Friday, 3-Saturday, 4-Sunday, 5-Monday, 6-Tuesday, 7-Wednesday.

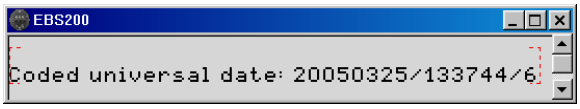
In order to insert a field consisting of various components of the current date and time to be updated automatically, follow the steps below:

1. In the text edit line type in a text containing a subset of the above specified coding characters. The coding characters can be input in any order.
2. Select the characters of the field with the mouse.
3. While holding the cursor on the text edit line press the right mouse button and select the command **Define variable field** in the menu displayed. Then select **Univ. date & time** in the list displayed. The same operation can be performed with the menu shortcut Shift+F12.





On selecting the print preview option (see ***Print Preview***) you can see what the print will look like on 25-03-2005 at 13:37:44 hours or later.

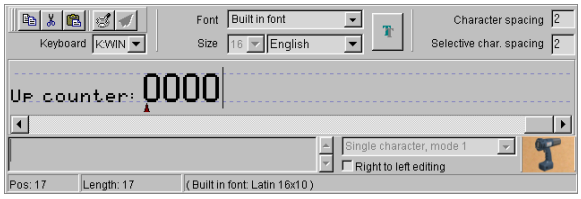


Object Counters

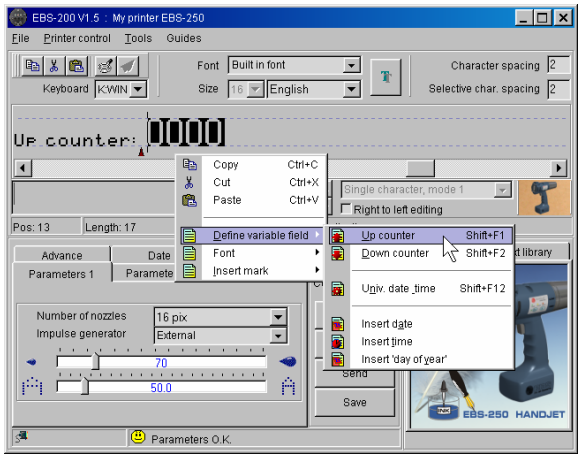
You can print a consecutive number of print on every object being labelled or at a specified interval on long objects with the use of **incremental or decremental counters**.

In order to insert the field of an incremental (decremental) counter to be updated automatically follow the steps below:

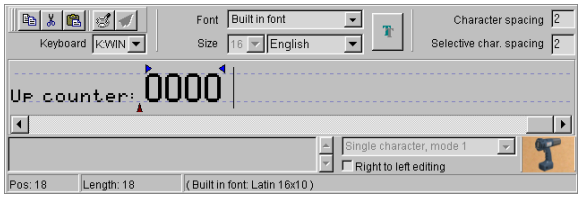
1. In the text edit line position the cursor in the place where you want the counter to be displayed. Insert a font-change or other markers, if required.
2. Type in the setting for the counter: the maximum required number of digits, e.g. zeros, if the counter is to start counting from zero. If counting is to start from a specific number, type in the number and add leading zeros to fill in all counter positions.



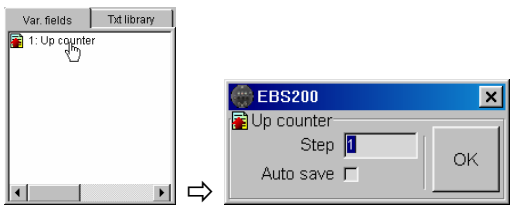
3. Highlight the counter setting with the mouse.



4. While holding the cursor on the text edit line press the right mouse button and select the command **Define variable field** in the menu displayed. Then select **Up counter** (**Down counter**) in the list displayed. The same operation can be performed with the menu shortcut Shift+F1 (Shift+F2).



5. You can change other parameters of the counter. Double-click the counter in the variable field list. You can change the increment or select the **Auto save** parameter of the counter.



The contents of a volatile counter are lost after the printer has been switched off. With a non-volatile counter the counting can be resumed from its last setting after the printer has been switched on again.

NOTE: An increment (decrement) is added to the counter each time button **6** is pressed and the contents of the incremental (decremental) counter increases (decreases). The only exception is when a text is to be printed repeatedly, that is when the print parameter **Text repetitions>1** or is set to **Continuous**. In such a situation button **6** does not time each of the prints but rather groups of prints. The **Refresh var.fields** parameter from the **Parameters 3** tab decides whether every successive repetitive print modifies the contents of the counters or not. The distance between the beginnings of two consecutive prints produced with repetitive printing is defined with the **Rep. distance** parameter from the **Parameters 2** tab.
Example: For the counter defined as above set the **Text repetitions** parameter to **3**.

a). If the **Refresh var.fields** parameter is set to OFF, the following prints can be produced:

If release button **6** is pressed for xth time	The following counter contents are printed:		
1	0000	0000	0000
2	0001	0001	0001
3	0002	0002	0002
---	---	---	---
999	0999	0999	0999

b). If the **Refresh var.fields** parameter is set to ON, the following prints can be produced:

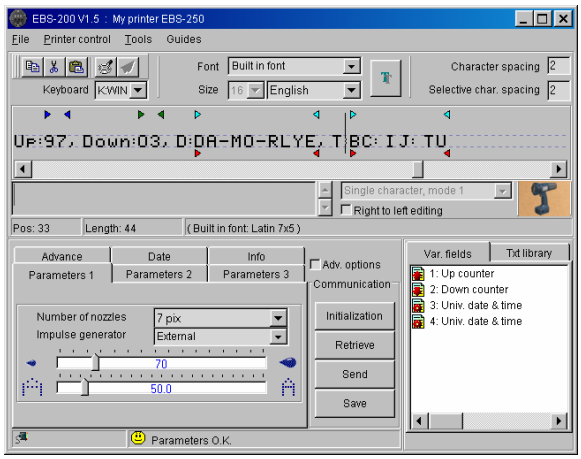
If release button **6** is pressed for xth time	The following counter contents are printed:		
1	0000	0001	0002
2	0003	0004	0005
3	0006	0007	0008
4	0009	0010	0011
---	---	---	---
333	0996	0997	0998
334	0999	1000	1001

Print Preview

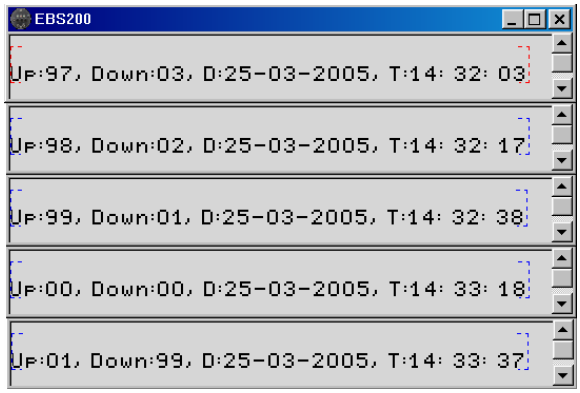
On creating a text to be printed with the use of the variable fields you can check for proper operation of the counters using the print preview option.

Use the key to preview a print and initiate variable fields.

The key is used to preview successive prints; it is available after the key has been pressed once.
Define a text containing one or more variable fields (incremental or decremental counters, date and time).

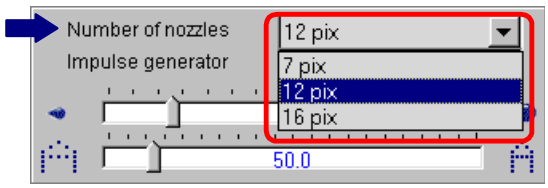


Check if the variable fields operate properly by using the print preview option. Press . In the Print Preview window you can see what the text looks like after the text, print and the printer's general parameters required have been applied.
If a text to be printed is defined as above, then the following contents can be printed on 25-03-2005 from 14:32 hours on, when printing is released with button **6** of the printer (simulated by the key in the program):



How to Modify Print Parameters

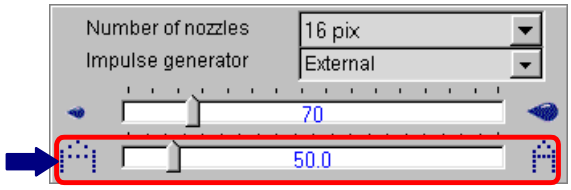
Number of nozzles



This parameter defines the number of nozzles in the print head. This number is the number of dots and the maximum print height, **Hmax** [pix]. In other words it is the maximum height of the vertical row in a print. It determines whether the full or restricted range of fonts can be used by the text editor. You can learn the number of nozzles in your printer by accessing the printer configuration with the Initialization key (see **Number of nozzles** in the **Parameters 1** tab).
At the same time a broken line is displayed in the text edit line to show the maximum print height **Hmax**. It helps you match fonts with your printer capabilities.

If you transfer to the printer and print a text whose height (number of dots) is greater than the setting of the **Number of nozzles** parameter, then the part of the text above **Hmax** is cut off.

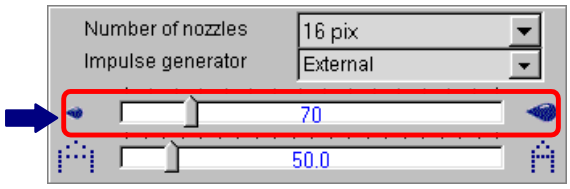
Character Resolution



This parameter defines resolution (a number of **dots/decimetre**) of a text to be printed. The visual effect of any change in the **Text width** parameter is a change in the character width and in consequence, in the length of the entire text.
The settings of the parameter can vary between **0.5** and **400** with the increment of **0.1**.

The settings of the **Text width** print parameter are restricted not only by the above mentioned range limits. The current setting is controlled by the printer control program and can be further reduced according to the settings of other print parameters. Any attempt to set too high a print rate is automatically rejected.

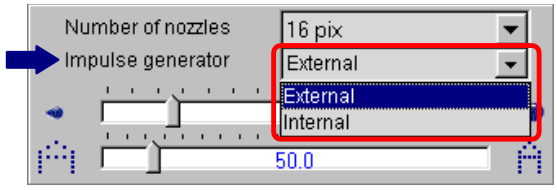
Intensity of Ink Drops



This parameter impacts on the volume of every ink drop jetted out of the print head. If you increase intensity, you make the diameter of drops and colour saturation in the print increase.
The settings of the **Dot size** parameter range from **31** to **255** with the interval of **1**.

Any increase in intensity setting increases ink consumption.

Mode of Timing



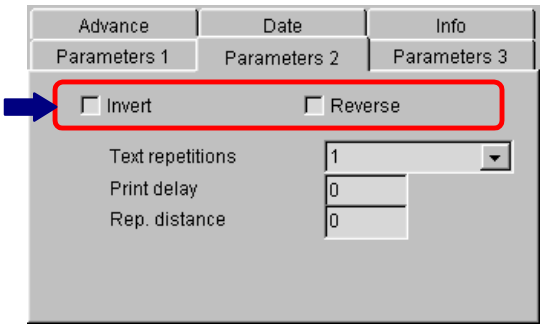
Timing determines the moments at which vertical rows of text are printed. Timing can be synchronised using:

- Lower guide roll **4** - set the **Impulse generator** parameter to **External**. Lower roll **4** rotates on the axis of the built-in encoder (rotational speed converter).
- Internal generator - set the **Impulse generator** parameter to **Internal**.

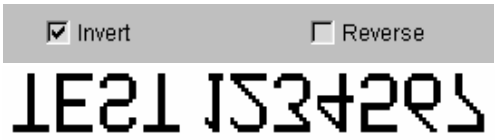
When printing is timed by **Internal** generator, the print rate is not synchronised with the printer travel rate.

Inverting and Reversing a Text

The directions are defined as the printer "sees" them.



Select the **Invert** parameter in order to print a text "upside down".



Select the **Reverse** parameter if you need to label objects by moving the printer from the right-hand side to the left-hand side.

the printer travels from left to right

TEST 1234567 or from right to left

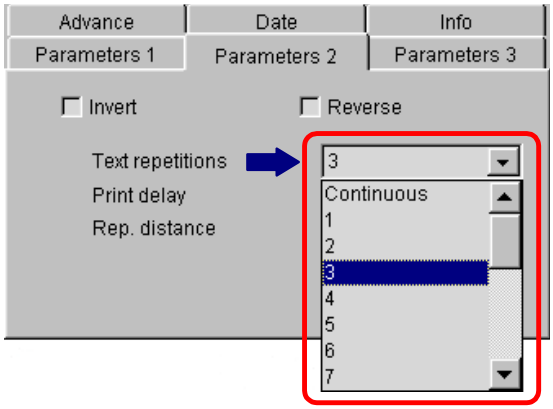
The reverse or inverse printing options can also be used to make prints on transparent surfaces and the prints need to be legible from the other side (mirror images in the vertical or horizontal directions).

Select the **Invert** and **Reverse** parameters in order to make proper prints when objects to be labelled are positioned upside down.

the printer travels from left to right

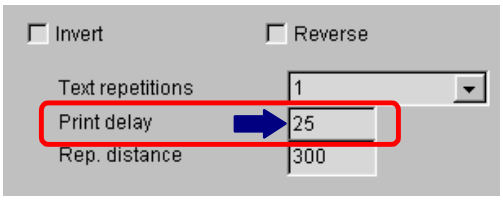
TEST 1234567 Reversed view of the print

Repeating a Text (Repetition)



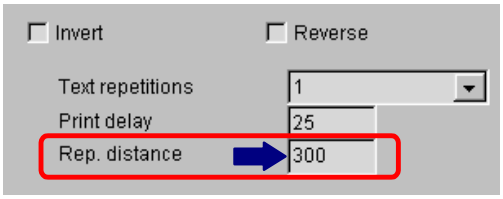
The **Text repetitions** parameter defines how many times printing needs to be repeated from the start point, after the printing has been initiated with release button **6**. You can print a text repeatedly on one object - this is a so called text repetition. If long objects (such as pipes, hoses, cables, strips) need to be labelled, you can set continual printing. The interval between texts is set with the **Rep. distance** parameter - see further below.

Print Delay

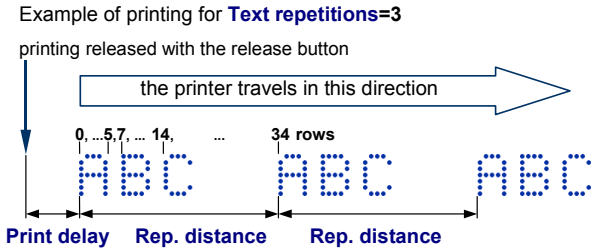


The **Print delay** parameter defines the distance between the point at which printing is released (with release button **6**) and the point at which printing should start. The distance is given as a number of empty rows to be timed after printing has been released until real printing starts. With it you can adjust the position of a print in relation to a reference point, for example the edge of an object.
The settings of the **Print delay** parameter range from **0** to **9999** with the increment of **1**.

Distance between Texts

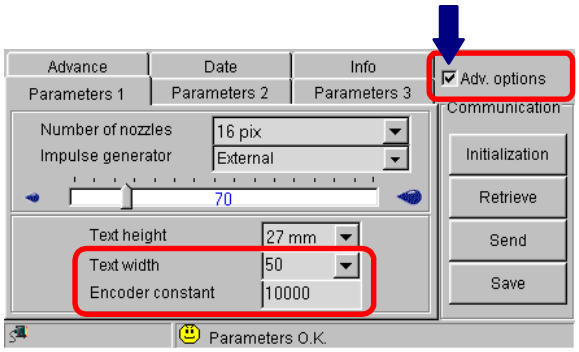


The **Rep. distance** parameter defines the distance between the beginnings of the texts that are printed repeatedly (**Text repetitions**>1). The distance is specified as a number of vertical rows (timed by a timing system).
The settings of the **Rep. distance** parameter range from **0** to **9999** with the increment of **1**.



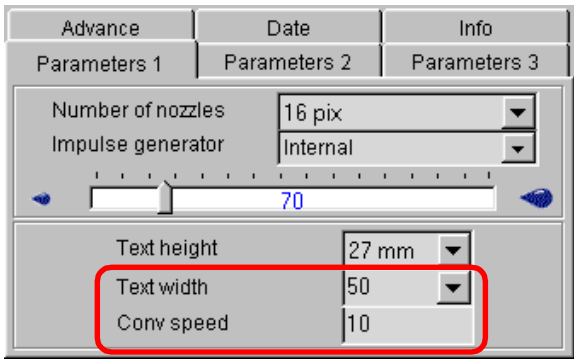
Printer Travel Rate

The parameter is available in the **Parameters 1** tab only after the **Adv. options** box has been selected.
This is mostly used in stationary printers, although sometimes it may be useful for manual printing.



In order to ensure that a print is legible (neither too packed nor too spaced out) you need to adjust the frequency at which vertical rows are printed to the printer travel rate. Such an adjustment is made with the following print parameters:

- **Encoder constant** - type in the number of pulses generated by the built-in encoder per 1 metre if the **Impulse generator** parameter is set to **External** (the settings range from 10x**Text width** to 99999).
- **Conv speed** - type in the printer travel rate given as a number of metres per minute, if the **Impulse generator** parameter is set to **Internal** (the settings range from 1 to 99999, subject to restrictions to be imposed by the control program).



The effect of a change in the parameter is higher packing or spacing out of the text if the printer travel rate remains unchanged. This parameter is closely related to the **Text width** parameter.

How to Transfer/Save Text Files to/in the Printer

See figure **F**. In order to send a text and print parameters to the printer, you need to click the Send key or use the command **Send text and parameters** from the **Printer control** menu. Wait until an **O.K.** message is displayed in the transmission status window.
Once a text has been sent, it can be printed but it will be lost after the printer has been switched off.
In order to save a text in the non-volatile memory of your printer, click the Save key or the command **Save text and parameters** from the **Printer control** menu. When you do that, the text is ready for printing after the printer has been switched off and then on.

How to Change a Text File Stored in the Printer

Every text file can be changed in two ways.

Method One:

1. Retrieve a text file from the printers memory by clicking the Retrieve key or the command **Retrieve text and parameters**.
2. Modify the text file and/or print parameters with the text editor.
3. Save the text file in the non-volatile memory of the printer by clicking the Send and Save keys consecutively, bearing in mind that an **O.K.** message should be displayed in the transmission status window each time a file is saved.

Method Two:

1. Open a project (text and parameters) with the command **Open project** or only a text file (without any parameters) with the command **Open text** on your computer.
2. Save the text in the non-volatile memory of the printer by clicking the Send and Save keys consecutively, bearing in mind that that an **O.K.** message should be displayed in the transmission status window each time a file is saved.

Printing

Removing and Installing a Nozzle Shield

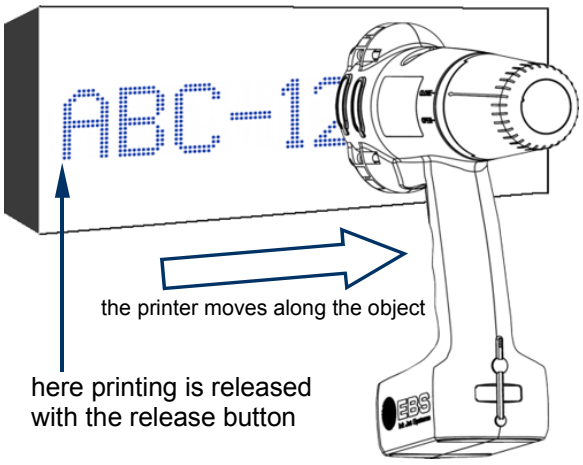
Before you start printing remove shield **2** that protects the nozzle plate. When you finish printing, protect the nozzles against dirt and dust and against ink drying out by fixing shield **2** to nozzle plate **3**.

> Before you install shield **2** onto the front part of the print head always check whether the shield is clean. If it is dirty, wash it with some wash-up.

Printing a Text File Saved in the Printer

See figure **A**.

1. Switch the printer on.
2. Press and then release button **19**, PRINT ON/OFF - lamp **18** starts lighting. If ink pressure in the ink container is insufficient, a micro compressor starts to add some air. Wait until the micro compressor stops working.
3. Move the head of the printer to an object to be labelled to ensure that drive rolls **1** and **4** touch the surface of the object.
4. Press print release button **6** and move the printer along the object ensuring that the drive rolls roll at a uniform speed.



5. Make successive prints by pressing release button **6**.
6. After all prints have been made press and then release button **19**, PRINT ON/OFF. Lamp **18** goes out. If lamp **18** flashes after button **19** has been pressed, this means

that release button **6** has been pressed but printing has not been completed. You can finish printing or abandon it by pressing button **19** once again.

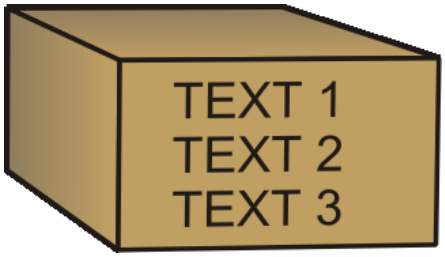
If the printer has been idle for longer than about 30 minutes, the nozzle outlets might become covered with dry ink. Before you start printing make a trial printing or use the rinse-the-nozzles function for a while in order to clear the nozzles - see ***Rinse the nozzles***.

If you label objects whose height is smaller than 60 mm (the distance between the rolls is 60 mm), make sure that at least lower roll **4** (designed for synchronising printing) touches the object being labelled - see figure **I**. The rule does not apply if printing is synchronised by the internal generator.

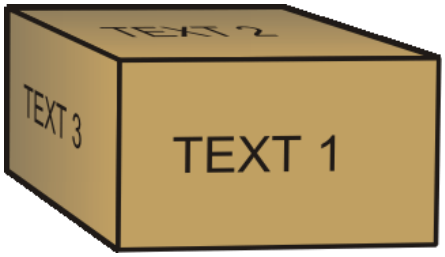
Line Printing

Line printing is used to print a few texts manually in a fast way:

- on consecutive lines as shown in the figure below:

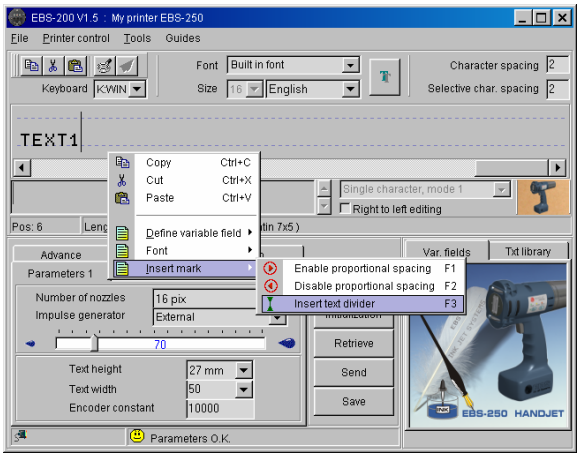


- or in different places on an object as shown in the figure below:

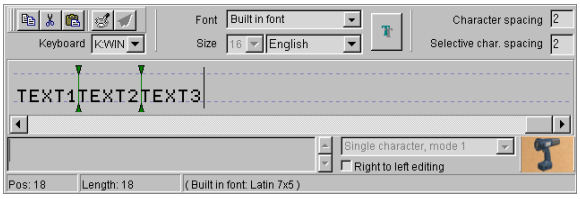


Create texts to be printed in the following way:

1. Create **TEXT 1** in the text edit line. Every line of the text can have all the text elements (such as variable fields, various fonts, etc.) described previously.



2. Place the cursor at the end of text **TEXT 1** and insert a text-change marker. While holding the cursor on the text edit line press the right mouse button and select the commands **Insert mark** and **Insert text divider** in the menu displayed. The same operation can be performed with the menu shortcut F3.
3. Type in successive texts separating them with the text-change marker (F3).



4. Transfer the text to the printer and you can start printing.

Each text is selected and printed with release button **6**.

The number of texts to be printed in separate lines is not limited. Instead, the total number of characters in all lines is subject to limitation: it must not exceed 1500 characters.

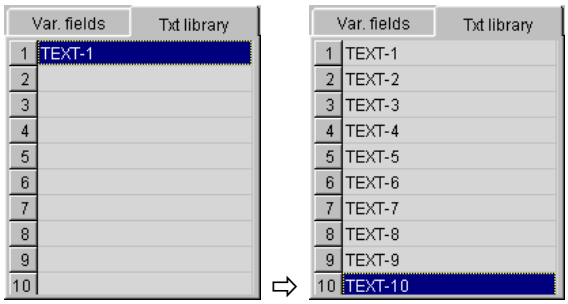
Using a Number of Texts

You can store up to 10 projects (texts and parameters) in the printer memory. Each project can contain any of the text elements described previ-

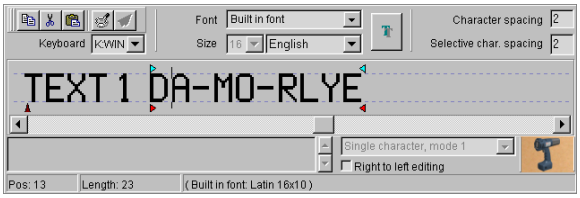
ously (such as variable fields, various fonts, etc.), and also the line printing function.

Creating a Text Library in the Printer

1. In the **Txt library** window, type in the name of a first text and confirm the name with the ENTER key.



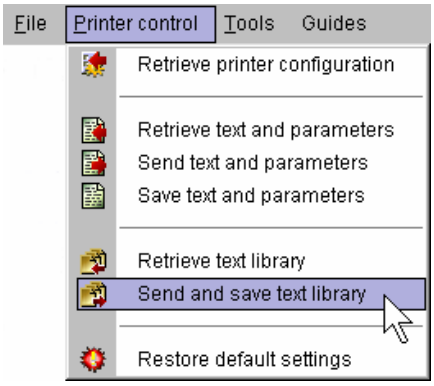
2. In the text edit line create a complete text and set print parameters for the text.



3. Make sure the printer is on and click the Send key in the control program window in order to send a text file to the printer, and then click the Save key in order to save the text file in the non-volatile memory of the printer.
4. Repeat steps from 1 to 3 in order to programme other texts.

Quick Saving/Retrieving Text Files to/from the Text Library

In order to save the entire text library to the printer use the command **Send and save text library**.



Similarly you can retrieve the text library from the printer using the command **Retrieve text library**.

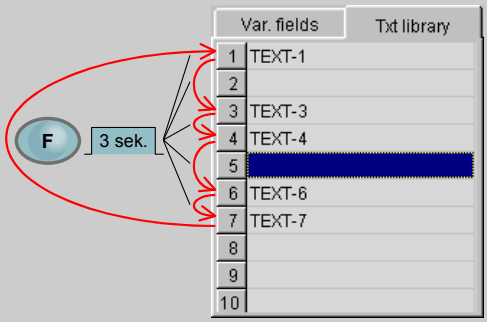
The command **Send and save text library** erases all text files contained in the non-volatile memory of the printer.

Printing Text Files from the Library

Select texts stored in the text library of your printer one by one by pressing button **20** - F 3 sec. for a while until bussing is heard from buzzer **35**. Such a switching operation can be performed regardless whether the printer is in the *print* state (lamp **18** lights) or not. The buzzing from buzzer **35** is different for a first text.

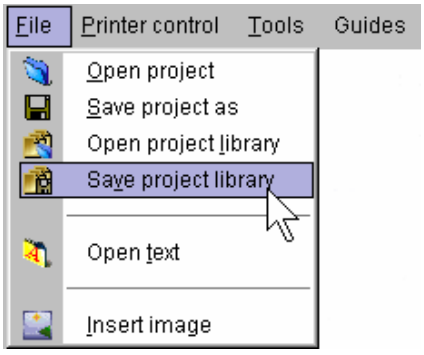
1. Start printing by pressing button **19** - PRINT ON/OFF.
2. Print a text.
3. Switch the printer to print another text by pressing button **20** - F 3 sec..
4. Print the successive text.

In order to ensure that the printer skips over text files during the text switching operation (to be performed with function key **20)** delete the text name in the library and save such an empty text name in the printer.

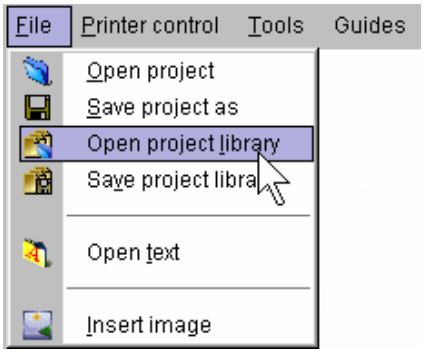


Saving the Project Library on a Computer Disc

The project (text and print parameter) library can be saved on a computer disc with the command **Save project library** from the **File** menu.



Similarly you can open the project library on your computer with the command **Open project library**.



You can quick-load the project library from the computer disc to your printer with two successive commands **Open project library** and **Send and save text library**.

Maintenance, Storage and Transport

- It is recommended that the front part of the print head, especially nozzles **3** and possibly rolls **1** and **4** are washed to remove left-over ink and dirt after the job has been finished and the device has been switched off. Do the washing with a wash-up sprayer. Then fasten shield **2** to the nozzle plate. The printer should be stored and transported in the packing case delivered with the printer.
- If the printer remains idle for a longer period (over 3 weeks), ink may partially dry in printer components. Therefore follow the storage instructions given below not to be disappointed when you try to use your printer afterwards:
  - if the printer has already been used before, store it with ink container **11** fastened to it,
  - protect the printer against dust, dirt, any influence of aggressive vapours and gases and excessive temperature and moisture. Ideally, place the printer in a polyethylene tight bag, remove air from the bag and close it tightly. Then place it in the packing case.
- Always carry the printer in its packing case. During normal operation avoid exposing the printer to strong mechanical shocks (protect the printer, especially nozzles **3**, rolls **1** and **4** and panel **10** against impact, falling onto hard surfaces or scratching with sharp objects). Use shield **2** to protect the front part of the head.

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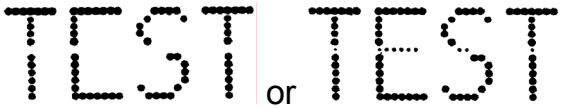
Problems with Functioning and Operation of the Printer

Some of the nozzles do not jet ink

Rinse the nozzles

Some drops are missing on a print.



- Aim the nozzle outlet at a vessel, for example the one you use to wash the printer.
- Wash the nozzles with wash-up, if they are covered with dried ink.
- Start the rinse-the-nozzle function. Press release button **6** three times and hold it down for a few seconds. This causes all electromagnets in the head to open and ink to pour out at pressure after a warning buzzing signal has been generated by buzzer **35** 🔊 !
- When ink starts jetting regularly out of each nozzle, release button **19**.

> Frequent and long-lasting use of the rinse function increases ink consumption.

The printer does not print

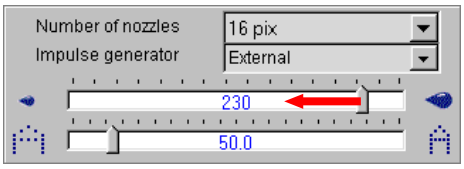
On starting printing and making an attempt to print you can hear the electromagnets of the nozzle valves operating but ink drops are not always jetted out of the nozzles properly. The quality of printing deteriorates or no print is produced.

After about 100 standard ink containers (or over 10 litres of ink) have been consumed, the built-in ink filter may need replacing. It is recommended that the replacement operation be performed by qualified or EBS service staff.

Boldfaced or Blurred Prints

The print is heavily saturated with ink, ink drops blur and the entire print seems to spread over the object being labelled.

Decrease the setting of the **Dot size** parameter by moving the parameter slider to the left.



Questions and Problems

If these Instructions and other support in the form of electronic files contained on the installation CD, which has been delivered together with the printer, do not provide answers to all your questions, then:

- look through the web site of the printer's manufacturer, EBS Ink-Jet Systems and try to find the answers to your queries,
- try asking the question to the manufacturer's representative,
- present the problem in the contact form available on the manufacturer's web site and forward the form following the instructions given therein.

Electronic guides

Some operating instructions and programming operations are presented via interactive creators/guides available from the **Guides** menu of the control program. The creators are

installed together with the control program.
It is possible to download other creators offered on the web site of EBS Ink-Jet Systems.

Connecting the Printer to a Computer (via RS-232 Interface)

See figure **H**.

The other elements of the portable printer system:

36. RFI Module for wireless (radio) communications with an RS-232 interface.
37. Cable for series communications between a computer (via COM port) and the RFI Module (via RS-232).
38. Socket to connect a cable from a communications port in the computer.
39. RFI Power socket (with RS-232).
40. LED indicator to indicate radio transmission in the RFI Module.

As an alternative to module **23** (RFI via USB) you can use RFI Module **36** that communicates via RS-232.

1. Find an unoccupied series port (COM) in your computer.
2. Connect the port COM of your computer with socket **38** in module **36** via cable **37**
3. Install module **36** in such a way that the optimal range for radio transmission is ensured.

> Do not cover module **36** with unnecessary shields or objects, especially metal ones. Ideally, place module **36** at a certain height, to avoid any obstacles between the printer and module **36**.

4. Insert connector **27** of power pack **26** to power socket **39** of module **36** and connect the power pack to a wall outlet.
5. Switch the printer on.
6. Start the control program. The program identifies the printer and if it communicates with the printer successfully, the following message is displayed: **Printer is found**.
7. Click the **Initialization** button in order to view the printer configuration. If an **O.K.** message is displayed, data have been transmitted correctly.

> If you find it difficult to communicate with the printer, try and configure it once again in the system. Start the **Network configuration** creator from the **Guides** menu and follow the instructions.

H

🕮 Technical Parameters

Parameter	Description
Number of nozzles	**16**
Nozzle diameter	**150µm** as standard optionally: 60µm, 80µm, 100µm, 120µm, 170µm, 200µm.
Print height	**27 mm**
Height of objects to be labelled	**from 70 mm** (contact with both rolls), **from 35 mm** (contact with the lower roll to print with for example 7 nozzles only - see figure I). A guide and rolls can be used optionally to support rectilinear printing; they are most useful for line printing, for labelling pipes, barrels and other cylindrical objects.
Working position in 3D space	**any**
Number of text lines per run	**1**
Line printing	Supports printing of up to 10 texts in successive lines.
Maximum number of characters per text	**1500** (including control characters for the printer's built-in fonts).
Number of texts and accompanying print-parameter (stored in the printer's memory at the same time)	**from 1 to 10**. Texts are loaded to the printer via a PC.
Printing of graphics (logo, special graphics characters)	**Optionally**. Editing and printing of graphical texts and symbols with the use of Windows® (True Type) fonts as standard.
Special characters	National (diacritical) characters, graphic characters for information, warning, transport and other purposes (a character set defined by the manufacturer), etc.

Parameter	Description
Variable fields (texts whose contents vary dynamically according to occurrence of a specific event)	Date and time in any format, expiry date, incremental or decremental counters, universal counter (of pieces, pallets, meters etc.).
Programming	• Wireless (radio) line (with the range of up to 50 m), • Text and parameter processing software compatible with Windows® 98SE / ME / NT / 2000 / XP®, • Programming with the use of a mini-terminal (optionally), • The option of networking of up to 30 printers; such a network is radio-controlled via a PC or terminal.
Timing	Either synchronised with rotational speed of the lower guide roll or at time intervals by an internal generator regardless of the printer's travel rate during printing.
Power supply	**Battery** powered with a pack of 3 Li-Ion cells.
Approximate operating time with the battery fully charged	**50 hours** of non-stop printing at the temperature of 20°C, automatic low-battery indication.
Re-charging	Automatically via an external **24V⎓ / 1 A DC** power pack. Charging time - **less than 150 minutes (<2.5 hours)**. Number of charging cycles: **500** (up to 70% of initial capacity).
Ink	It is available in easy detachable containers. It is made on the basis of alcohol, MEK or water, in various colours (among others in white, yellow, blue, green, red or black) to be ordered from a catalogue.
Container capacity	**110 ml** enough to print about 100 000 characters with 7x5 pixel matrix or about 17 000 characters with 16x10 pixel matrix, **150 ml** (optionally).

Parameter	Description
Working pressure	**from 0.03 MPa to 0.04 MPa (from 0.3 bar to 0.4 bar)**
Operating temperature range	from **+5°C** to **+40°C**
Storage temperature range (over a longer period)	from **+1°C** to **+45°C**, if water-based ink is used for printing. from **-10°C** to **+45 °C** if MEK or ETANOL-based ink is used for printing.
Humidity	Up to **95% without steam condensation** - at temperatures higher than the dew point (the printer can be operated when it rains provided that the surface to be labelled is dry).
Weight	**980±10 g** printer with a battery and full ink container, without power pack and cable.
Dimensions in vertical position (length / width / height)	**240 / 130 / 265 mm**
Dimensions in working position	See figure I below (provided that the surface to be labelled is vertical).

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Printer Accessories

NOTE: some elements may not be part of a typical delivery or other elements which are not specified below may be included, depending on your order.

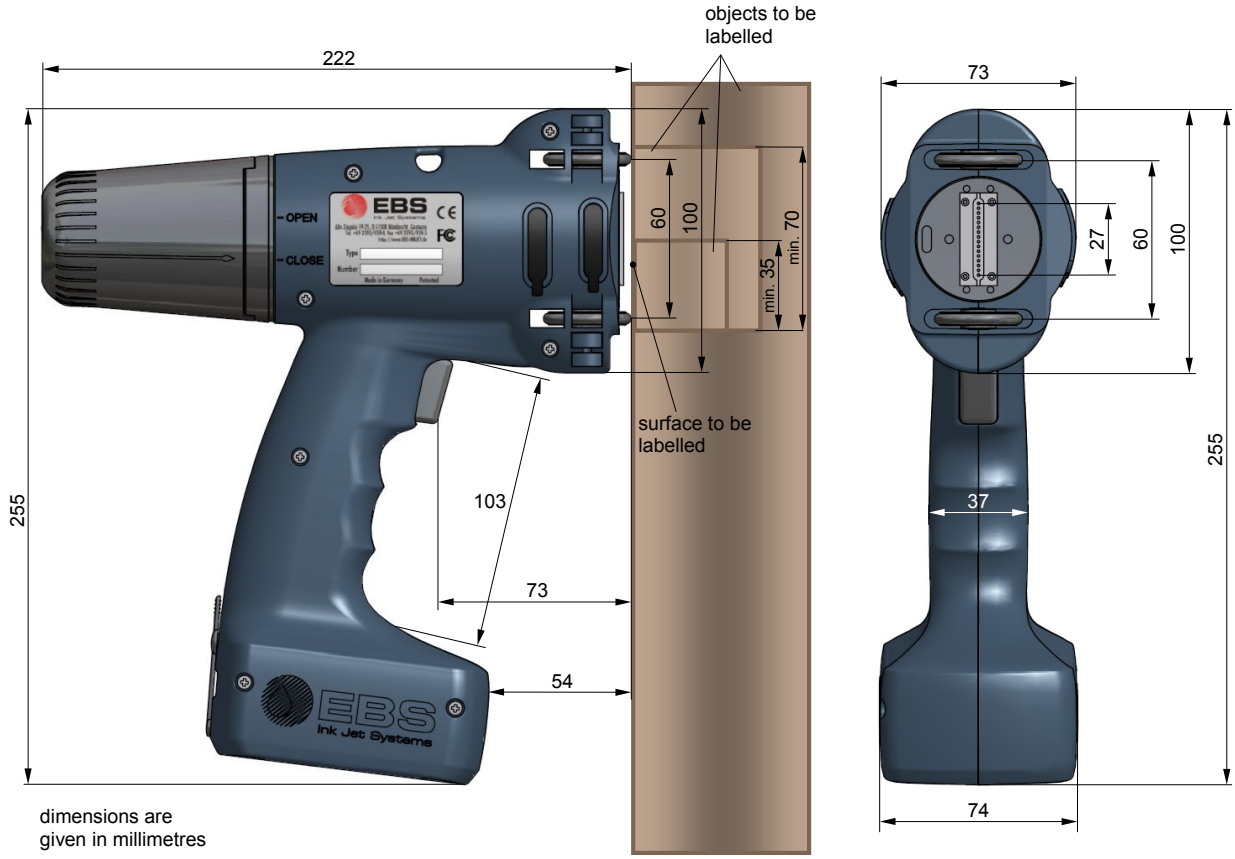
❒ The following elements are delivered most frequently as part of a typical system:

- Packing case to hold all accessories ..... 1 unit
- HANDJET EBS-250 Printer ..... 1 unit
- Power pack (24V⎓/1A) with cable ..... 1 unit
- Ink container ..... 2 units
- RFI Radio Communications Module (USB interface) ..... 1 unit
- Cable to connect RFI Module to PC (USB interface) ..... 1 unit
- CD with utility software and user-support files (instructions, advice, help in electronic form) ..... 1 disc
- Operating Instructions (hardcopy) ..... 1 copy

❒ Other elements to be delivered with the order as part of the system or separately:

- RFI Radio Communications Module (RS232 interface; to be powered with a standard power pack available in the typical system),
- Cable to connect RFI Module to a PC (RS232 interface),

- Double guide rolls to support rectilinear printing,
- Quadruple guide rolls to support rectilinear printing,
- Cylindrical guide rolls to support rectilinear printing.



The printer in its working position - dimensions (side and front views)

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